



Model 390 shown

## 5 Frame Piston Pump

### Models

# 323 390

### FEATURES

#### Superior Design

- Triplex Uniflow design provides continuous forward liquid flow for smooth operation.
- Wetted cups and floating pistons are lubricated and cooled by pumped liquid for long cup life.
- Mechanically actuated inlet valves give strong lift and easy prime.
- Precision design 304 stainless steel valves and seats are hardened and polished for ultimate seating and extended valve life.
- Oil bath crankcase assures optimum lubrication.
- 100% wetted seal design allows pumped liquid to cool and lubricate for longer life.

#### Quality Materials

- Cylinder and sleeve wear surfaces are hard chrome plated 304 stainless steel for maximum durability and abrasion resistance.
- Chrome plated, brass manifolds for strength and corrosion resistance.
- Special high strength TNM connecting rods offer superior bearing quality strength.
- Chrome-moly crankshaft gives unmatched strength and surface hardness.
- Oversized crankshaft bearings with greater loading capacity mean longer bearing life.

#### Easy Maintenance

- Stepped stainless steel piston rod with chrome-plated, stainless steel sleeve allows easy replacement from front of pump.
- All wet-end wear parts are easily serviced without entering crankcase, requiring less time and effort.
- Wear parts are available in convenient kits.

#### **⚠ WARNING**

All systems require both a primary pressure regulating device (i.e., regulator, unloader) and a secondary pressure safety relief device (i.e., pop-off valve, safety valve). Failure to install such relief devices could result in personal injury or damage to the pump or to system components. CAT PUMPS does not assume any liability or responsibility for the operation of a customer's high pressure system.

### SPECIFICATIONS

U.S. Measure

Metric Measure

#### MODEL 323

Flow .....	5.0 GPM	(19 L/M)
Pressure Range .....	100 to 1500 PSI	(7 to 105 BAR)
Inlet Pressure .....	-8.5 to + 40 PSI	(-0.6 to + 2.8 BAR)
RPM .....	1000 RPM	(1000 RPM)
Bore .....	0.866"	(22 mm)
Stroke .....	0.669"	(17 mm)
Maximum Liquid Temperature.....	160°F	(71°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Inlet Ports (1).....	1/2" NPTF	(1/2" NPTF)
Injection Port (1).....	1/4" NPTF	(1/4" NPTF)
Weight .....	16.6 lbs.	(7.5 kg)
Dimensions .....	12.4 x 10.0 x 5.28"	(315 x 254 x 134 mm)

#### MODEL 390

Flow .....	12.0 GPM	(45 L/M)
Pressure Range .....	100 to 600 PSI	(7 to 40 BAR)
Inlet Pressure (up to 8 GPM) .....	-8.5 to +40 PSI	(-0.6 to +2.8 BAR)
Inlet Pressure (8 to 12 GPM) .....	Flooded to 40 PSI	(Flooded to +2.8 Bar)
RPM .....	1200 RPM	(1200 RPM)
Bore .....	1.260"	(32 mm)
Stroke .....	0.629"	(16 mm)
Maximum Liquid Temperature.....	140°F	(60°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Inlet Ports (1).....	1" NPTM	(1" NPTM)
Weight .....	18.8 lbs.	(8.5 kg)
Dimensions .....	14.3 x 10.0 x 5.28"	(363 x 254 x 134 mm)

#### COMMON SPECIFICATIONS

Discharge Ports (3) .....	1/2" NPTF	(1/2" NPTF)
Crankcase Capacity .....	.21 oz.	(0.6 L)
Pulley Mounting .....	Either side	(Either side)
Shaft Diameter.....	0.787"	(20 mm)

### ELECTRIC HORSEPOWER REQUIREMENTS

MODEL	FLOW		PRESSURE						MOTOR PULLEY SIZE Using 1725 RPM Motor & Std. Pump Pulley O.D.	
	U.S. GPM	L/M	PSI 400	PSI 500	PSI 600	PSI 1000	PSI 1200	PSI 1500	RPM	DRIVE
323	5	19	N/A	N/A	N/A	3.4	4.1	5.1	1000	4.6
	4	15	N/A	N/A	N/A	2.7	3.3	4.1	800	3.7
	3	11	N/A	N/A	N/A	2.1	2.5	3.1	600	2.8
390	12	45	3.3	4.1	4.9	N/A	N/A	N/A	1200	5.6
	10	38	2.8	3.4	4.1	N/A	N/A	N/A	1000	4.6
	8	30	2.2	2.8	3.3	N/A	N/A	N/A	800	3.7

**DETERMINING THE PUMP R.P.M.**

$$\frac{\text{Rated G.P.M.}}{\text{Rated R.P.M.}} = \frac{\text{"Desired" G.P.M.}}{\text{"Desired" R.P.M.}}$$

**DETERMINING THE REQUIRED H.P.**

$$\frac{\text{GPM} \times \text{PSI}}{1460} = \text{Electric Brake H. P. Required}$$

**DETERMINING MOTOR PULLEY SIZE**

$$\frac{\text{Motor Pulley O.D.}}{\text{Pump R.P.M.}} = \frac{\text{Pump Pulley O.D.}}{\text{Motor R.P.M.}}$$

See complete Drive Packages [Includes: Pulleys, Belts, Hubs, Key] Tech Bulletin 003. Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

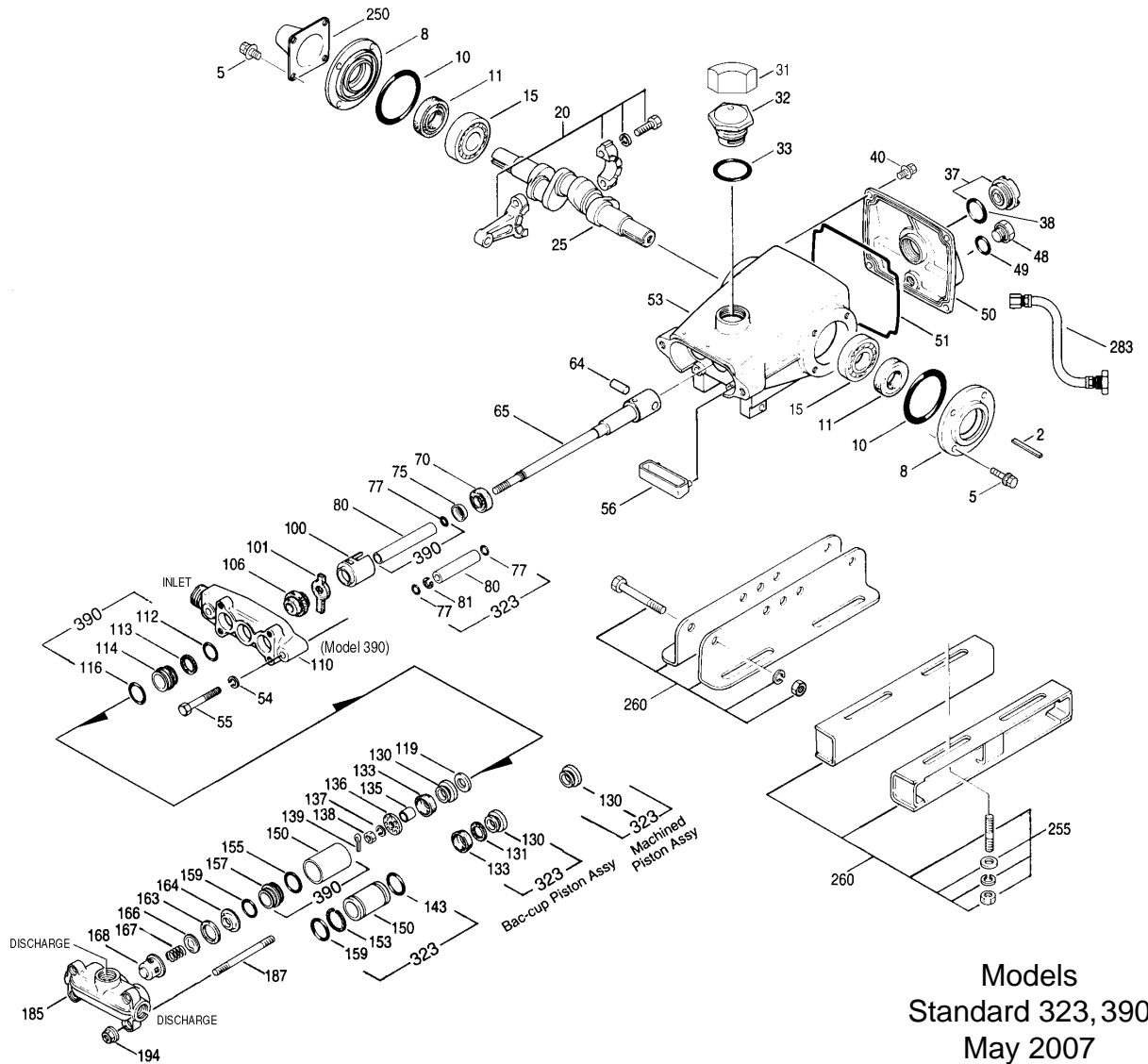
*"Customer confidence is our greatest asset"*

# PARTS LIST

ITEM	PART NUMBER				DESCRIPTION	QTY
	<b>323</b>	<b>MATL</b>	<b>390</b>	<b>MATL</b>		
2	30057	STL	30057	STL	Key (M6x6x25)	1
5	92519	STZP	92519	STZP	Screw, HHC, Sems (M6x16)	8
	125824	STCP R	125824	STCP R	Screw, HHC, Sems (M6x16)	8
8	43344	AL	43344	AL	Cover, Bearing	2
10	43343	NBR	43343	NBR	O-Ring, Bearing Cover - 70D	2
11	43222	NBR	43222	NBR	Seal, Oil - 70D	2
15	14480	STL	14480	STL	Bearing, Ball	2
20	45883	HS	45883	HS	Rod, Connecting	3
25	43342	FCM	43342	FCM	Crankshaft	1
31	828710	—	828710	—	Protector, Oil Cap w/Foam Gasket	1
32	43211	ABS	43211	ABS	Cap, Oil Filler	1
33	14177	NBR	14177	NBR	O-Ring, Oil Filler Cap - 70D	1
37	92241	—	92241	—	Gauge, Bubble Oil w/Gasket	1
38	44428	NBR	44428	NBR	Gasket, Flat Flex, Oil Gauge - 80D	1
40	92520	STZP	92520	STZP	Screw, HHC, Sems (M6x20)	4
	126541	STCP R	126541	STCP R	Screw, HHC, Sems (M6x20)	4
48	25625	STCP	25625	STCP	Plug, Drain (1/4"x19 BSP)	1
49	23170	NBR	23170	NBR	O-Ring, Drain Plug - 70D	1
50	48772	AL	48772	AL	Cover, Rear [10/01]	1
51	48773	NBR	48773	NBR	O-Ring, Rear Cover [10/01]	1
53	48769	AL	48769	AL	Crankcase [10/01]	1
54	12503	STZP	12503	STZP	Lockwasher (M10)	2
	126231	STCP R	126231	STCP R	Lockwasher (M10)	2
55	80288	STZP	87936	STZP	Screw, (HH-M10x30) (HSH-M10x50)	2
	126531	STCP R	126516	STCP R	Screw, (HH-M10x30) (HSH-M10x50)	2
56	43355	POP	43355	POP	Pan, Oil	1
64	43351	CM	43351	CM	Pin, Crosshead	3
65	43775	SZZ	44312	SZZ	Rod, Piston	3
70	43527	NBR	43527	NBR	Seal, Oil	3
75	25327	S	25327	S	Slinger, Barrier	3
77	25392	NBR	25392	NBR	O-Ring, Sleeve- 70D	6/3
	28771	FPM	28771	FPM	O-Ring, Sleeve	6/3
80	25299	SCP	44311	SCP	Sleeve	3
	28460	S	44625	S	Sleeve	3
81	29003	PTFE	—	—	Back-up-Ring, Sleeve	3/0
100	43530	PVDF	43530	PVDF	Retainer, Seal	3
101	43532	—	43532	—	Wick, Long Tab	3
106	25153	NBR	—	—	Seal, LPS, Blue Dot	3
	—	—	100015	FPM	Seal, LPS, Ungreased	3
	30315	NBR	30315	NBR	Seal, LPS, Prrrrm-A-Lube	3
	30325	FPM	30325	FPM	Seal, LPS, Prrrrm-A-Lube	3
110	43767	BBCP	44286	BBCP	Manifold, Inlet (323 Bottom Port) (390 Sideport)	1
112	—	—	43781	NBR	O-Ring, Inlet Adapter, Inner - 75D	3
	—	—	11337	FPM	O-Ring, Inlet Adapter, Inner - 75D	3
113	—	—	11261	FBR	Spacer, Cylinder (Center Only)	0/1
114	—	—	44287	BB	Adapter, Inlet	0/3
116	—	—	27536	NBR	O-Ring, Inlet Adapter, Outer - 70D	0/6
	—	—	43174	FPM	O-Ring, Inlet Adapter, Outer - 70D	0/6
119	43533	S	27944	S	Valve, Inlet	3
130	—	—	27945	S	Piston	0/3
	103741	NBR	—	—	Cup-Piston, Machined	3/0
	43787	S	—	—	Piston, Bac-Cup	3/0
131	43788	PTFE	—	—	Ring, Bac-Cup	3/0
133	43792	NBR	—	—	Bac-Cup	3/0
	43789	FPM	—	—	Bac-Cup	3/0
	—	—	27946	FPM	Cup	0/3
	—	—	29093	SNG	Cup-Piston, V-Hot	0/3
135	27983	S	27796	S	Spacer, Piston	3
136	29588	S	27947	S	Retainer, Piston	3
137	27006	S	15850	S	Washer	3
138	27000	S	26546	S	Nut, Slotted	3
139	14158	S	14158	S	Cotterpin	3
143	43781	NBR	—	—	O-Ring, Cylinder - 75D	3
	11337	FPM	—	—	O-Ring, Cylinder - 75D	3
150	43768	SCP	44288	SCP	Cylinder	3
	43835	S	44627	S	Cylinder	3
153	21986	PTFE	—	—	Back-up-Ring, Cylinder	3
155	—	—	27536	NBR	O-Ring, Adapter, Inner - 70D	3
157	—	—	44310	BB	Adapter, Discharge	0/3
159	43781	NBR	43781	NBR	O-Ring, Adapter (390), Cylinder (323) - 75D	3
	11337	FPM	11337	FPM	O-Ring, Adapter (390), Cylinder (323) - 75D	3
163	43793	NBR	43793	NBR	O-Ring, Seat - 90D	3
	43791	FPM	43791	FPM	O-Ring, Seat - 90D	3
164	43779	S	103956	S	Seat	3
166	43721	S	104302	S	Valve	3
167	43251	S	43251	S	Spring	3
168	43780	S	103957	S	Retainer, Spring	3
185	43770	BBCP	43770	BBCP	Manifold, Discharge	1
187	85661	STZP	85191	STZP	Stud, Discharge Manifold (323 M8x100) (390 M8x110)	4
	126782	STCP R	126551	STCP R	Stud, Discharge Manifold (323 M8x100) (390 M8x110)	4

Replace as a set

# EXPLODED VIEW

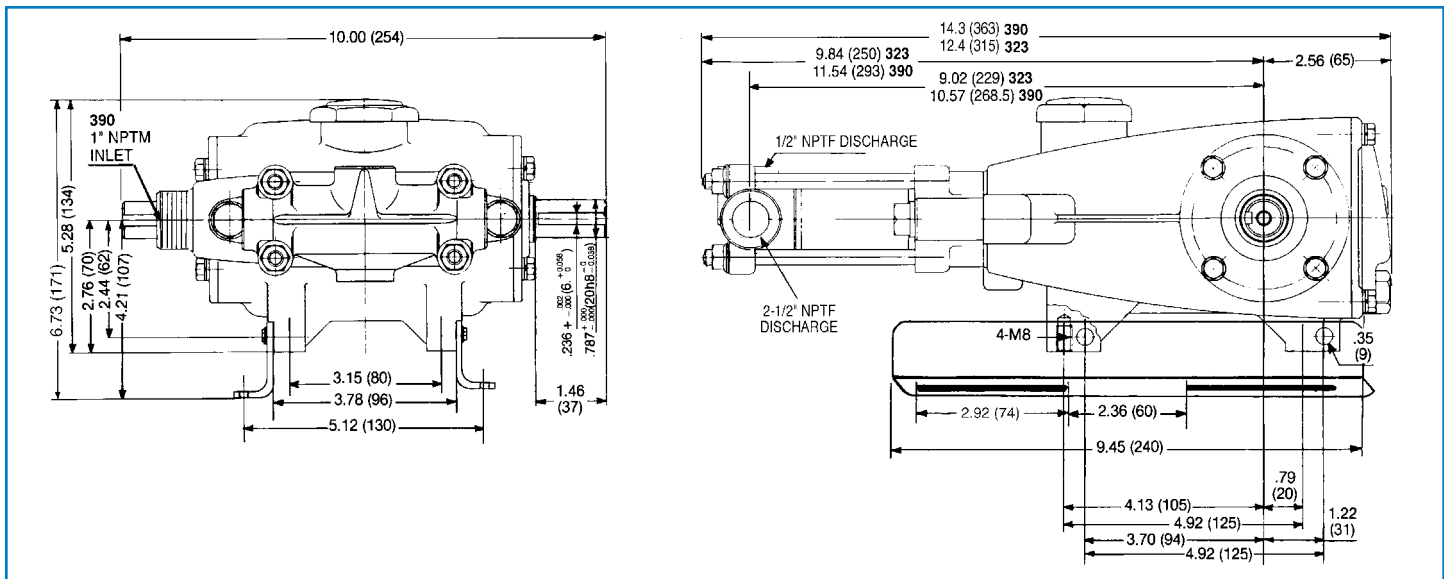


Models  
Standard 323, 390  
May 2007

	<b>323</b>	<b>MATL</b>	<b>390</b>	<b>MATL</b>		
194	101804	STZP	101804	STZP	Nut, Hex Flange	4
	126201	STCP R	126201	STCP R	Nut, Hex Flange	4
250	118672	STCP	118672	STCP	Protector, Shaft	1
255	30243	STZP	30243	STZP	Kit, Direct Mount	1
	30633	STL	30633	STL	Assembly, Pulley (Incls: 30058, 30057)	1
260	30611	STZP	30611	STZP	Assembly, Angle Rail	1
	30241	STZP	30241	STZP	Assembly, Box Rail (Incls: 23950, 30243)	1
265	30659	—	30659	—	Kit, Mounting (Incls: 30611, 30633, 118672)	1
275	30944	STL	30944	STL	Assembly, Hub & Key (Incls: 30945, 30057)	1
283	34334	—	34334	—	Kit, Oil Drain	1
300	<b>30993</b>	<b>NBR</b>	<b>31822</b>	<b>FPM</b>	Kit, Cup, Standard ( <b>323</b> Incls: 130, 139, 143) ( <b>390</b> Incls: 116, 133, 139, 143, 355)	1
301	<b>30858</b>	<b>NBR</b>	—	—	Kit, Bac-Cup <b>323</b> (Incls: 133, 139, 143, 355)	1/0
302	<b>30992</b>	<b>NBR</b>	—	—	Kit, Piston, Standard ( <b>323</b> Incls: 119, 130, 135, 136, 137, 138, 139, 143, 153)	1/0
	—	—	<b>31823</b>	<b>NBR</b>	Kit, Piston, Standard ( <b>390</b> Incls: 116, 119, 130, 133, 135, 136, 137, 138, 139, 155, 355)	0/1
	<b>30857</b>	<b>NBR</b>	—	—	Kit, Bac-Cup Piston (Incls: 119, 130, 131, 133, 135, 136, 137, 138, 139, 143, 153)	1/0
306	<b>30305</b>	<b>NBR</b>	—	—	Kit, Prrrrm-A-Lube Seal (Incls: 106, 139)	1/0
	<b>34011</b>	<b>NBR</b>	—	—	Kit, Seal, Blue Dot (Incls: 101, 106, 139)	1/0
	—	—	<b>31825</b>	<b>FPM</b>	Kit, Seal, LPS, Ungreased (Incls: 101, 106, 139)	0/1
	<b>30312</b>	<b>NBR</b>	—	—	Kit, Sleeve and Seal, Prrrrm-A-Lube (Incls: 75, 77, 80, 106, 139)	1/0
	—	—	<b>31824</b>	<b>NBR</b>	Kit, Sleeve and Seal, Ungreased (Incls: 75, 77, 80, 101, 106, 139)	0/1
310	<b>30859</b>	<b>NBR</b>	—	—	Kit, Valve, Q.V. Std for <b>323</b> (Incls: 163, 164, 166, 167, 168)	1/0
310	—	—	—	—	Kit, Valve, F.V. Std for <b>390</b> (Incls: 155, 159, 163, 164, 166, 167, 168)	0/1
355	<b>43548</b>	<b>NY</b>	<b>27964</b>	<b>NY</b>	Cup Inserter	1
—	6107	—	6107	—	Oil, Bottle (21 oz.) ISO 68 Multi-viscosity Hydraulic (Fill to specified crankcase capacity prior to start-up)	1

**Bold print part numbers are unique to a particular pump model. Italics are optional items. [ ]** Date of latest production change. R Components comply with RoHS Directive. See Tech Bulletins 024, 034, 036, 037, 038, 039, 064, 074, 083 and 090 for additional information.

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BB=Brass BBCP=Brass/Chrome Plated CM=Chrome-Moly FBR=Fiber FCM=Forged Chrome-Moly FPM=Fluorocarbon HS=High Strength NBR=Medium Nitrile (Buna-N) NY=Nylon POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SCP=304SS/Chrome Plated SNG=Special Blend (Buna) STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated SZZ=304SS/Zamak



Models 323, 390



- 1 Die cast aluminum **crankcase** means high strength, lightweight, and excellent tolerance control.
- 2 Oversized crankshaft **bearings** provide extended bearing life and pump performance.
- 3 Chrome-moly **crankshaft** provides unmatched strength and surface hardness for long life.
- 4 Matched oversized high strength **connecting rods** noted for superior tensile strength and bearing quality.
- 5 The **piston rods** are high tensile strength 304 stainless steel with Zamak crossheads.
- 6 The stainless steel **slinger** provides back-up protection for the crankcase seal, keeping pumped liquids out of the crankcase.
- 7 The **patented stepped piston rod** with hard chrome-plated **stainless steel sleeve** provides a durable wear surface and easy wet end servicing.
- 8 The **cylinder** and **sleeve** wear surfaces are hard chrome-plated 304 stainless steel for longer service life.
- 9 **Manifolds** are a high tensile strength chrome-plated brass for long-term continuous duty.
- 10 100% wet **cup/seal** design adds to service life by allowing pumped liquids to cool and lubricate the elastomers on both sides.
- 11 304 stainless steel **valves, seats, and springs** provide corrosion-resistance, ultimate seating and extended life.
- 12 **Crossheads** are 360° supported for uncompromising alignment.
- 13 Mechanically actuated **inlet valves** provide strong lift and easy prime.

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